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# CamBioTec: Promoting Biotechnology through Canada-Latin America Partnerships

*by Deana Driver*



**CamBioTec can help boost agricultural production through biotechnology  
by linking researchers and entrepreneurs in Canada and Latin America**

**(Photo: D. Marchand, IDRC)**

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It hasn't resulted in a lucrative deal yet, but it's only a matter of time before contacts made during a trip to Mexico City last year start paying off for a Saskatoon-based biotech company — and its prospective business partners in Latin America.

[John Cross](#), president of [Philom Bios](#), visited Mexico in July 1996 through CamBioTec, an international network that promotes Canada-Latin America collaboration in the application of biotechnology. The experience "put us in contact with other companies which might be potential partners in the market and gave us a better feel for the other country," he said.

Philom Bios, a company with 39 employees, was formed in 1980 to develop, manufacture, and market microbial products that improve the productivity of plants. Its participation in the CamBioTec network promises to open up new markets and create new product options.

## Soil inoculant

For example, Philom Bios is currently selling a soil inoculant called Provide, which generates an extra \$12 per acre profit for farmers in Western Canada, according to Cross. Products like Provide, which increase phosphate uptake, could benefit farmers in South America, due to its soil type and agricultural practices. It could also be used to alleviate pollution problems in Mexico, by "reducing excessive phosphate levels in the soil and retarding agricultural phosphate run-offs in the waterways," he said.

Philom Bios is currently concentrating on building its sales in western Canada, and Cross wants to make sure the company has the resources and ability to do the job properly before expanding to other markets. CamBioTec has helped it make contacts, do market research, and gain a better feel for international markets, "so when we are ready, we're not starting from ground zero."

## Exploring business partnerships

Philom Bios is just one of many Canadian and Latin American companies exploring new business partnerships as a result of CamBioTec's efforts. Launched in 1995 by the International Development Research Centre (IDRC), the biotechnology network helps entrepreneurs and researchers in the agri-food and environmental management sectors identify potential partners, promising technologies, and funding sources.

In addition to helping Philom Bios, the CamBioTec meetings last year provided an opportunity for Mexican researchers to meet North Americans who might some day market their products. One researcher was working on new strains of *Rhizobium*, a bacteria which helps legumes such as peas and lentils fix nitrogen from the air. Another researcher had developed a method of increasing the level of a certain plant sugar, which makes it more resistant to cold.

For its part, Philom Bios is "very familiar with field efficacy systems" and could help Latin American businesses understand how to prove a product's efficacy in a farmer's field, said Cross. "We're also very familiar with the regulatory system in North America and intellectual property matters concerning microbial products, and the marketing of microbial products."

## Window into other countries

"CamBioTec is a tremendous vehicle for bringing together technology supply with technology users. It's a window into other countries where we have no knowledge," he added. CamBioTec allows companies such as Philom Bios to meet "the movers and shakers" in other countries. "It gives one a certain credibility which is invaluable in those first introductions," Cross concluded.

*Deana Driver is a freelance writer based in Regina, Saskatchewan.*

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### Sidebar:

[CamBioTec: An International Knowledge Broker](#)

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### Resource Persons:

**John Cross**, 318 - 111 Research Drive, Innovation Place, Saskatoon, Saskatchewan, S7N 3R3; Tel: (306) 668-8220; Fax: (306) 975-1215; E-mail: [philom@innovplace.saskatoon.sk.ca](mailto:philom@innovplace.saskatoon.sk.ca)

**Dr Javier Verástegui**, Coordinator, CamBioTec - Canada, [BIOTECCanada](#), 420-130 Albert Street, Ottawa,

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### Related IDRC articles and publications:

[Improving Crop Resistance: A New Plant Breeding Technique Borrows from the Past](#), by Kevin Conway

[Knowledge Broker Initiative: Linking the Creators and Users of Knowledge](#), by Michael Smith

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### Additional resources:

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# CamBioTec: An International Knowledge Broker

CamBioTec is active in Canada and five Latin American countries including Argentina, Chile, Colombia, Cuba, and Mexico — each of which has a biotechnology sector. The network is organized around "focal point" institutions in participating countries. They broker connections with laboratories, firms, and research organizations; arrange executive seminars and partnering meetings; and serve as a guide to local market and technical information. The Canadian focal point is based at the Canadian Institute of Biotechnology in Ottawa, which helps Canadian companies and organizations explore the potential of Latin America's biotechnology market.

CamBioTec is not, however, just a business venture. "We are committed to promoting sustainable development in biotechnology," says Javier Verástegui, CamBioTec's coordinator in Canada. To that end, CamBioTec aims to strengthen public policy in developing countries, most of which have no regulations governing biotechnology. CamBioTec also supports research to assess the social, economic, and environmental consequences of new biotechnology applications in Latin America.

*Deana Driver*

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## Improving crop resistance: A new plant breeding technique borrows from the past

*by Kevin Conway*



**Plant breeder in Africa**

[Reducing pesticide use](#)  
[Health and economic benefits](#)

Given enough time, everything that is old will become new again. This cliché holds true for population breeding, an ancient crop improvement technique in which an entire population of plants is screened for the small minority with the best traits. The technique dominated plant breeding for millennia, but fell into disfavour in the early 1900's as word of Gregor Mendel's experiments with pea plants spread. Pedigree breeding techniques and the high yielding pure line crops that launched the Green Revolution owe their existence and success to Mendel, a diligent Austrian monk and the "father of modern genetics", whose work in the mid-1800's was ignored for 35 years.

But crop scientist [Raoul Robinson](#) believes the single-mindedness with which pedigree breeding has been adopted around the world is largely responsible for modern agriculture's addiction to chemical pesticides. "Plant breeding has four broad objectives: to improve the yield, the quality of crop product, the agronomic suitability, and the resistance to pests and diseases," he stated at a recent meeting held at the International



Development Research Centre (IDRC).

According to Dr. Robinson, modern plant breeding has been "spectacularly successful in the first three of these objectives. This is demonstrated by very large increases in agricultural production, and the fact that the world is still able to feed itself in spite of massive increases in the size of the population." However, breeders have generally fared much worse with the fourth goal. In some cases, pedigree breeding has actually reduced the level of resistance to pests. "This is why we use chemical pesticides in such large quantities," he explains.

### **Reducing pesticide use**

Dr. Robinson says the key to reducing the amount of pesticides entering our food chain is to refine the population breeding approach used by our ancestors. He points to the success of [recent work in Mexico](#) as an example of what can be accomplished. With funding from IDRC, Robinson and a team of researchers from the Colegio de Postgraduados in Montecillos, Mexico and the [University of Guelph](#) in Canada used mass selection techniques to dramatically increase the yield of black beans — from 400 to 1,500 kilograms per hectare — without the help of pesticides.

"Our best lines are now outyielding the commercial lines. The commercial lines have been sprayed and ours have not," says Dr. Robinson. His technique, called "horizontal resistance breeding", relies on the genetic variability present within the landraces of Mexican beans. (A landrace is a genetically diverse, cultivated plant population.) Unlike their genetically uniform pure line cousins, he explains, individual plants within a landrace display varying degrees of resistance to pests: some are highly susceptible to parasites and usually die, most are moderately susceptible to parasites but can still produce seed when attacked, and others are highly resistant and tolerate parasitism well. Through careful selection, the plant breeding team simply shifted the resistance displayed by the majority of plants towards those individuals with more resistance.

### **Health and economic benefits**

Results of this Mexican-Canadian collaboration have important implications for small scale farmers throughout the South. Breeding techniques that reduce the need for pesticides offer both health and economic benefits, especially in rural communities. For example, the improper use of pesticides is a serious health threat to agricultural workers and a major source of water pollution.

Mass selection also offers long-term benefits of broader significance to all of humanity. Today, small farms are the repository of much of the agricultural diversity on Earth. Any breeding technique or program that encourages farmers to preserve and enhance this diversity may help to safeguard the genetic pool from which future improvements in crops will likely come.

*Kevin Conway is IDRC's senior corporate writer.*

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### **Sidebar:**

[Population Breeding and Integrated Pest Management](#)

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### **Resource Persons:**

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[Breeding a Better Bean: The Horizontal Resistance Approach](#), by Douglas Powell

[High Maize Yields Offer Hope for Burundi Farmers](#), by Andrew Ker and Dunstan Malithano

[Integrated Pest Management for Colombian Small Farmers](#), by David Mowbray

[Return to Resistance: Breeding Crops to Reduce Pesticide Dependence](#)

[Women and Integrated Pest Management](#)

### Additional resources:

[Raoul Robinson's Home Page](#)

[Breeding for Resistance: Stages](#)

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[Selected References on Pesticides and Pest Management](#)

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# Knowledge Broker Initiative: Linking the Creators and Users of Knowledge

*by Michael Smith*



**Port at Concepción, Chile: Coastal cities face similar problems including how to balance transportation, tourism, and waste disposal needs**

**(Photo: R. Charbonneau, IDRC)**

[Swamped with information](#)

[Rarely on target](#)

[Coastal cities initiative](#)

[Serve as catalyst](#)

Like the rest of us, politicians often don't have the knowledge they need to make timely, appropriate decisions.

That's why the International Development Research Centre (IDRC), in partnership with the [International Federation of Institutes of Advanced Studies \(IFIAS\)](#), is launching experiments to demonstrate the value of a knowledge-broker — an intermediary that links the people who use knowledge and those who create it.

[Geoffrey Oldham](#), a science policy expert who developed the concept with IDRC, unveiled the idea in Toronto this June during a workshop at the [Global Knowledge '97 conference](#), sponsored by the World Bank and the Canadian government.

## Swamped with information

Oldham said the knowledge-broker idea arose from interviews with government officials in three very different societies — Australia, Canada, and China. The interviews, which were designed to assess the needs of decision-makers, yielded responses that were strikingly alike: "First of all, almost everyone said they were swamped with information," which by itself is not knowledge, he stressed. The respondents said that the information they were getting "needed to be filtered, digested, and turned into knowledge."

They also agreed that knowledge must be both timely and trusted. "The source of knowledge is as important as the knowledge itself" to many decision-makers, explained Oldham.

## Rarely on target

Surprisingly, university researchers — the traditional source of much knowledge — are widely viewed as "rarely on target." Thus, many decision-makers can see the need for an intermediary, "who could broker the knowledge they need where it exists."

During the workshop, Oldham and [Robert McLean](#), executive director of IFIAS, announced that planning workshops for two experiments to test the knowledge-broker concept would take place after the Global Knowledge conference: one will deal with the problems of coastal cities and the other will explore how to improve innovation systems.

## Coastal cities initiative

The coastal cities initiative will involve urban centres such as Montevideo and Buenos Aires. "These cities face similar challenges," such as how to balance transportation, tourism, and waste disposal needs, said McLean.

The innovation systems project — which includes representatives from China, Viet Nam, South Africa, Colombia, Argentina, and Sweden — will address issues such as regulation, how to measure innovation, how companies innovate, and how to promote innovation.

Other possible knowledge-broker projects could focus on health policy, distance education, new energy systems, trade policy, women's health, business development for small enterprises, and culture and communications policy, said McLean.

## Serve as catalyst

"The role of the knowledge broker as we see it is to serve as a catalyst," he added. In this way, it seems to differ from the traditional consultant's role, said Lynn Mytelka of the United Nations Commission for Trade and Development, one of the workshop panelists.

"Consultants come in, they do the job, and they go home with the knowledge," added Mytelka. "The chief advantage of the knowledge-broker experiment is to create a continuous interaction between the producers and the users of knowledge so that trust builds up."

*Michael Smith is a freelance science writer based in Toronto.*

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## Resource Persons:

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[Policy Researchers and Policy Makers: Never the Twain Shall Meet?](#), by David Glover

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[Connecting with the World: Priorities for Canadian Internationalism in the 21st Century](#)

[Information and Communication Technologies for Development](#)

[Making a difference: Measuring the impact of information on development](#)

### Additional resources:

[Knowledge Brokering Home Page](#)

[IFIAS Coastal Resources Management Programme Publications](#)

[IFIAS Proposed Programme on Renovating the International System of Science](#)

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